INTRODUCTION

Water is the only solvent that is naturally present on the earth. It is the universal solvent which takes the first place in the priority list of man and other organisms. Hence, water in sufficient quantity, is a vital necessity for the existence of life.

The sum total of all water on the earth makes up what is known as the hydrosphere. There are 400 billion gallons of water above, on and in the earth, but it is not evenly distributed. Water deposits occur as rivers, lakes, streams and oceans. Water is also found in the soil as ground water and is bound up as ice in glaciers. The world's oceans account for almost 94% of the total and the water of the world's land area accounts for 6%. The amount of freshwater that man can actually use comprises only 0.3% of the hydrosphere. This minute share of the hydrosphere plays an important role in human life and economy.

Rivers, lakes and ground water form the main source of freshwater for mankind. Out of these three, river waters have been put to most extensive utilization, may be due to the ease with which these can be harnessed to meet the human needs. Another property known as "self purification" which makes the rivers specially beneficial, is their ability to rejuvenate themselves during the course of flow. This property allows the river water to be used and reused by many communities located successively downstreams along the river banks. That is the reason why rivers are
considered as the backbone of the civilization. Infact, some of the river banks have become places of worship and pilgrimage centres.

The earliest documents of the human knowledge namely "Vedas, upanishads and puranas" extol the virtues of water, that it has the medicinal efficacy to cure certain diseases. Still there is a belief in Indians that a holy dip in river Ganga will give the salvation. But now it appears as the days are gone, when we would think of our source of water with comforts, happiness, its purity, medicinal efficacy and abundance.

The diverse use of freshwater is based on the unique physico-chemical and biological properties which also render it unfit for one or several uses, even after a minor change. There is an increasingly great evidence of deterioration in the quality of fresh water resources, both surface and ground water as a result of various human activities. Water pollution is a major problem in developed countries, since most of the rivers have been rendered into wastage drains. In developing countries like India the degree of pollution is gradually on the verge of increase. Though, India is a developing country, it has very bad sanitation problems. About 80% of the diseases reported in the country are water borne, due to improper management in the disposal of human wastes. Man has made quite a few blunders on water use and conservation. The worst of them being massive pollution of lakes and rivers. Pollution is
the main factor that threatens exhaustion of water resources.

Water quality deterioration preceeds environmental degradation. The major factors that deteriorate the quality of water include siltation, acidification, agricultural runoff, discharge of sewage, industrial effluents containing organic and inorganic pollutants and increased human interference. Even without human activity to pollute a lake or reservoir water would never be absolutely pure because of natural pollution or aging brought about in the form of soil erosion, deposition of leaves and animal wastes. Over a long stretch of time, a water body can have a natural death as a consequence of such pollution or aging. The natural process of eutrophication or environment slowly turns a reservoir into waste water sink. Furthermore, man's activity enormously speeds up this process.

A good river is essential for living and it should have self purifying capacity. But today the great rivers of the world have become open sewers and dumping places because of population explosion, industrialization and agricultural operations. In India, almost all major rivers are under the threat of water pollution. These rivers are becoming unsuitable for not only human use but also for other purposes, as a consequence of dumping sewage and industrial wastes. A survey by NEERI showed that about 70%
of India’s fresh waters are polluted with reference to conventional standards (Agarwal et al. 1982).

Therefore, it is of immense importance that periodical research and timely monitoring of rivers is very much necessary to keep our rivers in healthy condition and to save them from becoming unsuitable for human consumption and other usage.

The trophic status of a water body is determined to a large extent by the physico-chemical features and biological components. The chemical parameters measure the concentration of pollutants (Venkateswarlu, 1981) whereas the biological parameters show the degree of ecological imbalance that has been caused.

However, in India most of the workers have dealt either with physico-chemical parameters or with both physico-chemical and biological parameters in assessing water quality and the degree of pollution in lotic habitats.

The river Tunga is one such perennial river which is being seriously threatened by the pollution crisis as a consequence of indiscriminate use of the river to cater the human needs.

With this background an ecological study on river Tunga from Gajanur upto Gurupura has been chosen for the present investigation in order to understand physico-chemical characteristics, the biological composition, the
sources of pollution and to suggest remedial measures for the control of pollution in the river.

In addition to this, certain preliminary observations have been made as one time study and that includes zooplankton, macrophytic flora and fauna in order to understand an overall hydrobiological status of the waterbody. It is hoped that the data generated will yield some guidelines and warning notes to the Ecologists and Environmental engineers to adopt methods for the preservation of the river water.

The present investigation was carried out for a period of two years from February 1995 to January 1997. The data obtained has been discussed in detail in the light of previous work and presented in eight parts. Such as,

1. SCOPE OF THE PRESENT WORK
2. REVIEW OF LITERATURE
3. GENERAL TOPOGRAPHY AND STATIONS SELECTED FOR THE INVESTIGATION
4. MATERIALS AND METHODS
5. PHYSICO-CHEMICAL CHARACTERISTIC FEATURES
6. BIOLOGICAL CHARACTERISTICS
7. RESULTS AND DISCUSSION
8. SUMMARY AND CONCLUSION